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**BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES**

Application Number: 10/627,947
Filing Date: July 25, 2003
Appellant(s): HERNANDEZ ET AL.

MAILED
MAR 13 2007
GROUP 1700

Michael M. Pritzkau
For Appellant

EXAMINER'S ANSWER

This is in response to the appeal brief filed December 1, 2006 appealing from the Office action mailed January 25, 2006.

(1) Real Party in Interest

A statement identifying by name the real party in interest is contained in the brief.

(2) Related Appeals and Interferences

The examiner is not aware of any related appeals, interferences, or judicial proceedings which will directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal.

(3) Status of Claims

The statement of the status of claims contained in the brief is correct.

(4) Status of Amendments After Final

The appellant's statement of the status of amendments after final rejection contained in the brief is correct.

(5) Summary of Claimed Subject Matter

The summary of claimed subject matter contained in the brief is correct.

(6) Grounds of Rejection to be Reviewed on Appeal

The appellant's statement of the grounds of rejection to be reviewed on appeal is correct.

(7) Claims Appendix

The copy of the appealed claims contained in the Appendix to the brief is correct with one exception. Claim 26 should not appear in this appendix because this claim has been allowed.

(8) Evidence Relied Upon

(1) Gruden, C.L., "Fate and Toxicity of Aircraft Deicing Fluid Additives through Anaerobic Digestion" Doctoral Thesis (July 2000) pp. 1-123.

(2) Reed, B.E. et al., "Metal Adsorption by Activated Carbon: Effect of Complexing Ligands, Competing Adsorbates, Ionic Strength, and Background Electrolyte" Separation Science and Technology, 27(14), pp. 1985-2000 (1992).

(3) Hernandez, M., "Investigation of Selected Potential Environmental Contaminants: Benzotriazoles" EPA 560/2-77-001 (1977).

(9) Grounds of Rejection

The following grounds of rejection are applicable to the appealed claims:

Claims 1-22, 24, 25 and 28-35 stand rejected under 35 U.S.C. 103(a) as being unpatentable over the Gruden doctoral thesis, submitted July 2000, entitled "Fate and Toxicity of Aircraft Deicing Fluid Additives through Anaerobic Digestion" in view of the Reed et al. publication entitled "Metal Adsorption by Activated Carbon: Effect of Complexing Ligands, Competing Adsorbates, Ionic Strength, and Background Electrolyte." The Gruden thesis discloses removing heavy metals from an industrial waste stream by adding MeBT (methylbenzotriazole) and GAC (granular activated carbon) to the waste stream such that the MeBT simultaneously binds the heavy metals and is adsorbed by the GAC (see page 123). Accordingly, this primary reference discloses the claimed invention with the exception of the pH of the waste stream undergoing treatment, the type of activated carbon employed (claims 6, 9-13), the use of an enclosure for the treatment materials (claims 14, 15 and 29-32), and removing the

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metal from the resulting composition (claim 25). The Reed et al. publication discloses removing heavy metals such as cadmium and nickel from a solution with a combination of activated carbon and a complexing agent, and further teaches that better results are obtained with H-type carbon at an acidic pH (see Figs. 7 and 8 on page 1995). It would have been obvious to one of ordinary skill in the art at the time the invention was made to employ the recited type of activated carbon in the process of the primary reference, and to further conduct this modified primary reference process at an acidic pH, in view of the teaching by the secondary reference that such carbon and acidic conditions give excellent results for removing heavy metal ions from a solution. Also, it would have been obvious to one of ordinary skill in the art at the time the invention was made to provide an enclosure for the treatment materials of the thus modified primary reference, in order to facilitate their handling. Furthermore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to remove the metals from the spent treatment composition of the modified primary reference, in order to allow the treatment materials in this composition to be reused.

Claim 34 stands rejected under 35 U.S.C. 103(a) as being unpatentable over the EPA publication entitled "Investigation of Selected Potential Environmental Contaminants: Benzotriazoles." The reference discloses removing heavy metals from waste water with benzotriazoles (see page 81, penultimate paragraph). Accordingly, this reference discloses the claimed invention with the exception of the recited acidic pH. However, since the reference fails to disclose any criticality for the pH of the waste water undergoing treatment, and since this reference gives an example of treating the

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waste water at a relatively neutral pH (i.e. 7.85), one of ordinary skill in the liquid purification art would have been motivated to treat waste water having a slightly acidic pH (e.g. 6.85) by the reference process. Furthermore, mercury, copper and cadmium are clearly soluble in water at this slightly acidic pH, and this is all that is further required by appealed claim 34.

(10) Response to Argument

Appellant acknowledges the following paragraph bridging pages 122 and 123 of the Gruden publication:

Current novel digester configurations (USAB) have incorporated GAC as a support matrix to retain high biomass levels. Results from this research indicate that the addition of GAC to an anaerobic treatment system for ADF waste may diminish the toxic effects of MeBT and may eliminate MeBT from the effluent. This design may be fortuitous for other industrial waste streams because MeBT sorbs to GAC while simultaneously binding heavy metals; thus, adding MeBT to PACT or USAB may enable the treatment of waste streams with very high metals content that would otherwise be toxic.

Appellant then argues that “this passage is exclusively limited to the context of removing heavy metal in an anaerobic digester” (page 8, last paragraph of the brief), and that the process described by Gruden could not be used to treat an acidic waste stream because acidity will kill the biomass that provides the very functionality of the digester. This argument should not be deemed persuasive by the Board of Appeals. As clearly stated in the above noted passage of the Gruden publication “MeBT (methylbenzotriazole) sorbs to GAC (granular activated carbon) while simultaneously binding heavy metals.” No mention is made that this will only occur in the presence of a biomass. Accordingly, it is submitted that one of ordinary skill in the liquid purification

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art, given the teaching that this combination of treating agents is capable of binding heavy metal ions in solution, would have been motivated to treat any known heavy metal contaminated solution, acidic or otherwise, by this reference technique.

Furthermore, given the additional teaching by the Reed et al. publication that certain activated carbons in combination with a complexing agent are more effective at an acidic pH (see Figs. 7 and 8 on page 1995), this skilled artisan would have been motivated to treat an acidic solution contaminated by heavy metal ions in the manner proposed above.

Appellant also argues that "Reed is specifically limited to the mechanism of electrostatic immobilization and even disclaims any understanding of other types of mechanisms" (page 11, first full paragraph, of the brief). Again, this argument should not be deemed persuasive by the Board of Appeals. Whether or not Reed understands the mechanism of the Gruden publication is not deemed to be relevant. This secondary reference clearly teaches that in a process wherein heavy metals such as cadmium and nickel are removed from a solution with a combination of activated carbon and a complexing agent, better results are obtained with H-type carbon at an acidic pH; and given this teaching, one of ordinary skill in the liquid purification art would have been motivated to employ the recited type of activated carbon in the process of the primary reference, and to further conduct this modified primary reference process at an acidic pH, as proposed above.

Appellant's arguments, presented on pages 12-14 of the brief, with respect to dependent claims 3, 5, 7, 11, 15, 16, 18 and 19 should not be deemed persuasive by

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the Board of Appeals because Appellant has grouped claims 1-22, 24 and 25 together (see page 7, first line, of the brief), and has not provided a separate subheading for each of these dependent claims. Accordingly, these dependent claims should stand or fall together with parent claim 1 of this group.

With respect to Groups II through IV and VI (i.e. items D-F and H on pages 14-19 of the brief), Appellant merely points out what the claims in these groups recite, but does not present any additional arguments for patentability. Accordingly, the Board of Appeals should not deem these mere observations of claim content to be persuasive of patentability for the claims in these groups.

With respect to Group V (item G on pages 17-18 of the brief), Appellant argues that the rejection of claim 34 based on the EPA publication is improper because this reference “teaches the use of a very large amount of benzene solvent” (sentence bridging pages 17 and 18 of the brief); and that “there is no reason to assume that the presence of benzene is not critical to the process outcome” (page 18, lines 2-3, of the brief). The examiner has made no such assumption, nor any proposal to eliminate this benzene from the reference process. Instead, the examiner has merely proposed treating wastewater having a slightly acidic pH (e.g. 6.85) by this reference process. It is submitted that claim 34 does not preclude the use of benzene in combination with the metal-coordinating compound, i.e. because of the “comprising” language in line 2; and therefore, the fact that the EPA publication treatment process may require the presence of this solvent should not be deemed relevant, or persuasive of patentability by the Board of Appeals.

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(11) Related Proceeding(s) Appendix

No decision rendered by a court or the Board is identified by the examiner in the Related Appeals and Interferences section of this examiner's answer.

For the above reasons, it is believed that the rejections should be sustained.

Respectfully submitted,



Ivars C. Cintins

Conferees:



Steven Griffin



Duane Smith